

JUnit A Cook's Tour

: JUnit 3.8.x

1.

(Test Infected : Programmers Love Writing Tests, Java Report, July 1998, Volume 3, Number 7)

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JUnit

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JUnit

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Setup Fixture Fixture

3. JUnit

JUnit ("Patterns Generate Architectures", Kent Beck Ralph Johnson, ECOPP 94) .
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JUnit

3.1 - TestCase

TestCase

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()

Command (Gamma, E., et al. Design Patterns : Elements of Reusable Object-Oriented Software, Addison-Wesley, Reading, MA, 1995)

```
public abstract class TestCase implements Test
{
    ...
}
```

```
public abstract  
Test  
    TestCase  
class  
testCase  
    가
```

```
public abstract class TestCase implements Test
{
    private final String fName;

    public TestCase (String name) {
        fName = name;
    }
}
```

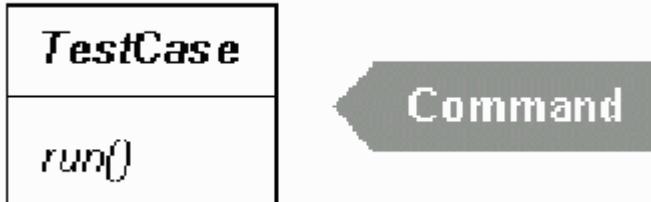
```
    }  
  
    public abstract void run ();  
    ...  
}
```

JUnit 가

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(Gamma, E., Applying Design Patterns in Java, in Java Gems, SIGS Reference Library, 1997) .

1 TestCase



3.2 Blanks to fill in - run()

```
public void run()
{
    setUp();
    runTest();
    tearDown();
}
```

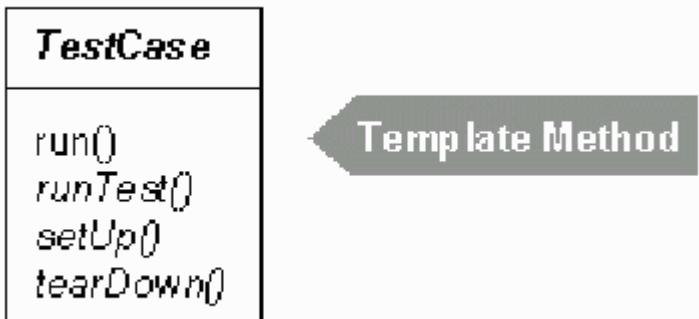
```
protected void runTest()
{
    ...
}
```

```
protected void setUp()
{
    ...
}
```

```
protected void tearDown()
{
    ...
}
```

setUp tearDown

2



3.3 Reporting results - TestResult

TestCase가 forest

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TestCase

flag

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flag

```
public class TestResult extends Object
{
    protected int fRunTests;
    public TestResult ()
    {
        fRunTests = 0;
    }
}
```

```
public void run (TestResult ) {  
    result.startTest (this);  
    () ;  
    runTest ();  
    tearDown ();  
}
```

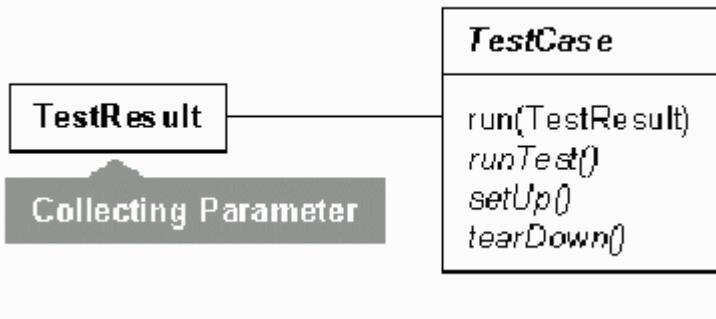
TestResult

```
public synchronized void startTest (Test test)
{
    fRunTests++;
}
```

```
    가           TestResult가
TestResult      startTest  synchronized
    TestCase
    가      run()
    .
```

```
public TestResult run () {  
    TestResult      = createResult ();  
    (      );  
    ;  
}
```

```
protected TestResult createResult () {  
    return new TestResult ();  
}
```



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JUnit

```
가 assertions
ArrayIndexOutOfBoundsException
AssertionFailedError
    가 catch (1)
(2)
```

```
public void run(TestResult result)
{
    result.startTest(this);
    setUp();
    try{
        runTest();
    }
    catch(AssertionFailedError e){// 1
        result.addFailure(this, e);
    }
    catch(Throwable e){// 2
        result.addError(this, e);
    }
    finally{
        tearDown();
    }
}
```

```
AssertionFailedError TestCase assert
JUnit assert
    가
```

```
protected void assertTrue (boolean condition)
{
    if(!condition)
```

```
        throw new AssertionFailedError();
}
```

AssertionFailedError (TestCase) 가
TestCase.run() AssertionFailedError

```
public class AssertionFailedError extends Error
{
    public AssertionFailedError () {}
}
```

TestResult

```
public synchronized void addError (Test test, Throwable t)
{
    fErrors.addElement (new TestFailure (test, t));
}
```

```
public synchronized void addFailure (Test test, Throwable t)
{
    fFailures.addElement (new TestFailure (test, t));
}
```

TestFailure
helper class

```
public class TestFailure extends Object
{
    protected Test fFailedTest;
    protected Throwable fThrownException;
}
```

TestResult 가

TestResult

```
throw
    MoneyTest
    TestResult 가
```

```
public void testMoneyEquals () {
    assertTrue (! f12CHF.equals (null));
    assertEquals (f12CHF, f12CHF);
    assertEquals (f12CHF, new Money (12, "CHF"));
    assertTrue (! f12CHF.equals (f14CHF));
}
```

JUnit TestResult

TextTestResult
UITestResult
JUnit Test Runner

TestResult
TestResult
HTMLTestResult HTML

3.4 -TestCase

Command
execute () (TestCase run ())

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testMoneyEquals testMoneyAdd

Command

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runTest testMoneyEquals runTest MoneyTest
testMoneyEquals

```
TestMoneyEquals MoneyTest {  
public TestMoneyEquals () {super ( "testMoneyEquals" ); }  
runTest () {testMoneyEquals (); }  
}
```

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JUnit

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Java Java

```
TestCase test = new MoneyTest ( "testMoneyEquals" ) {  
protected void runTest () {testMoneyEquals (); }
```

};

JUnit

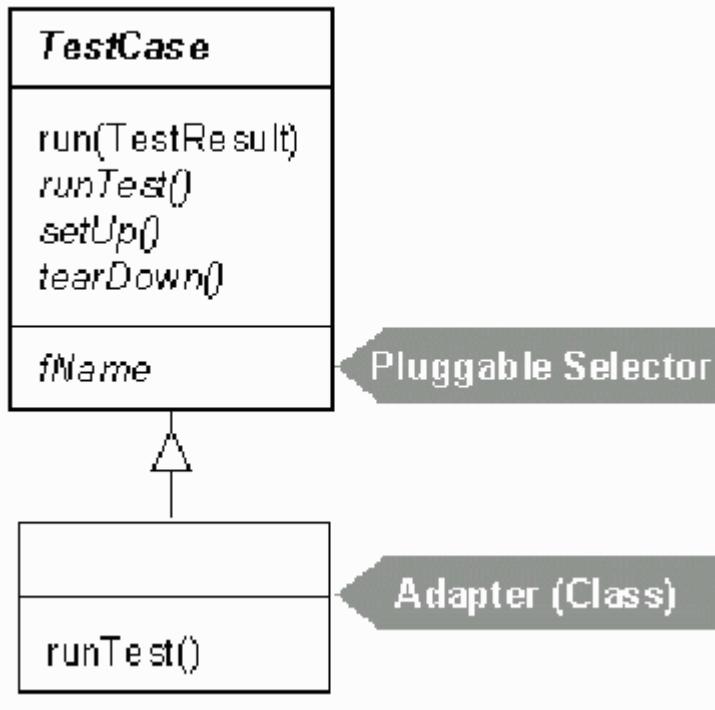
runTest

Method

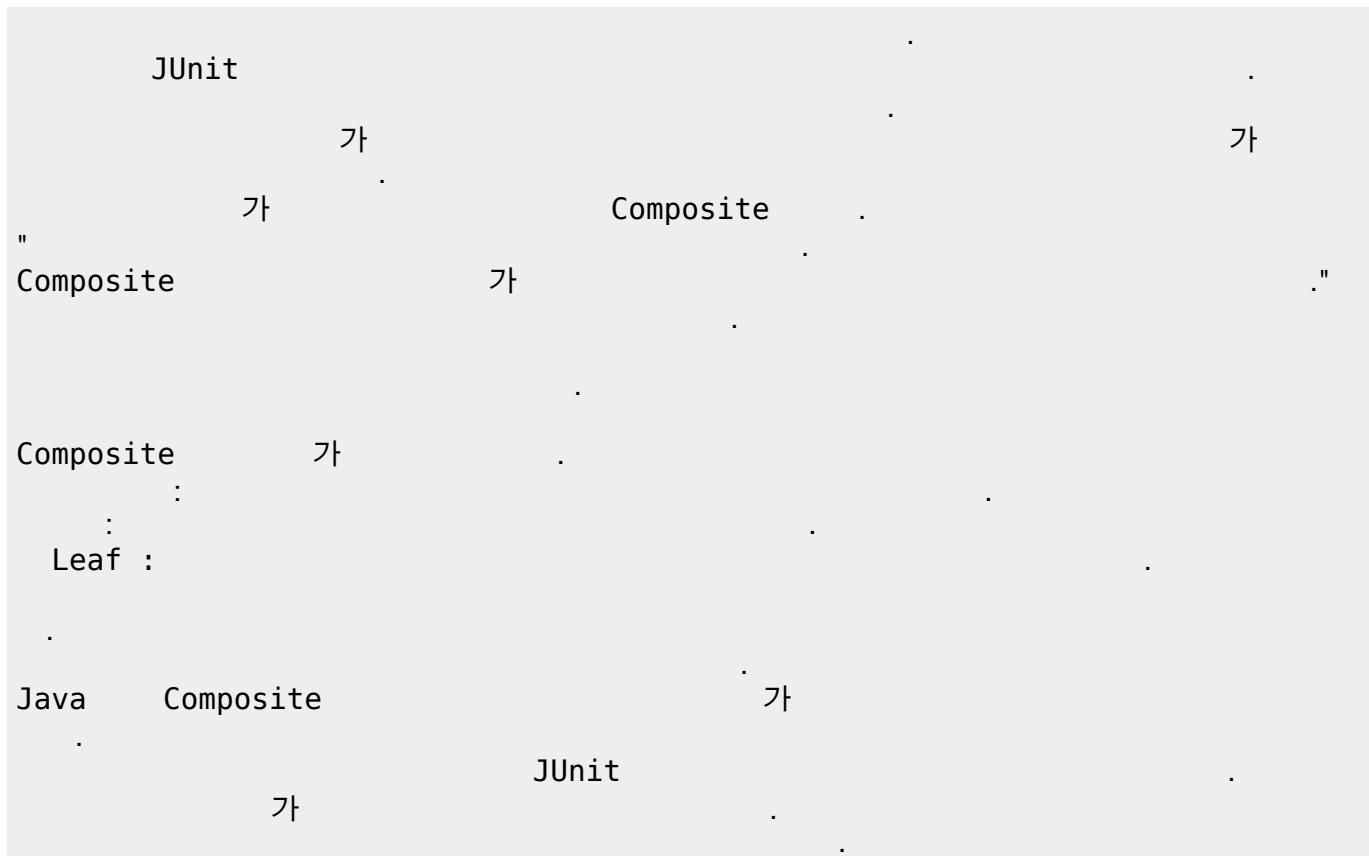
```
protected void runTest () throws Throwable {
    Method runMethod = null;
    try {
        runMethod = getClass ().getMethod ( fName, new Class [0] );
    } catch (NoSuchMethodException e) {
        assertTrue ( "Method \\" + fName + "\\", false );
    }
    try {
        runMethod.invoke (this, new Class [0]);
    }
    // InvocationTargetException    IllegalAccessException
}
```

JDK 1.1 API

```
public  
NoSuchMethodException  
    가 가
```



3.5 -TestSuite



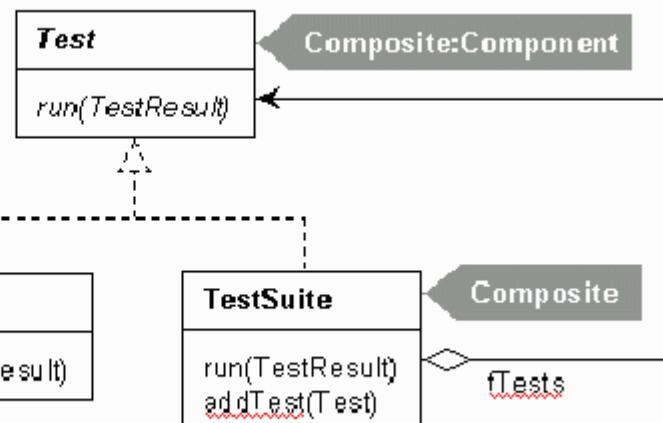
```
public interface Test {
    public abstract void run (TestResult result);
}
```

```
TestCase  Composite  Leaf
          |
          |
          TestSuite
TestSuite
```

```
    TestSuite  Test {
        private Vector fTests = new Vector ();
    }
```

```
run ()
```

```
public void run (TestResult result) {
    for (Enumeration e = fTests.elements (); e.hasMoreElements ();) {
        Test test = (Test) e.nextElement ();
        test.run ();
    }
}
```



```
가          addTest
```

```
public void addTest (          ) {
    fTests.addElement (test);
}
```

```
 TestCase  TestSuite      Test
          |
          |
          TestSuite
          |
          TestSuite
          |
          TestSuite
```

```
public static Test suite()
{
    TestSuite      = new TestSuite ();
    suite.addTest (new MoneyTest ( "testMoneyEquals" ));
```

```
        suite.addTest ( new MoneyTest ( "testSimpleAdd" ) );  
    }  
}
```

JUnit

```
static suite ()
```

가

"test"

TestSuite

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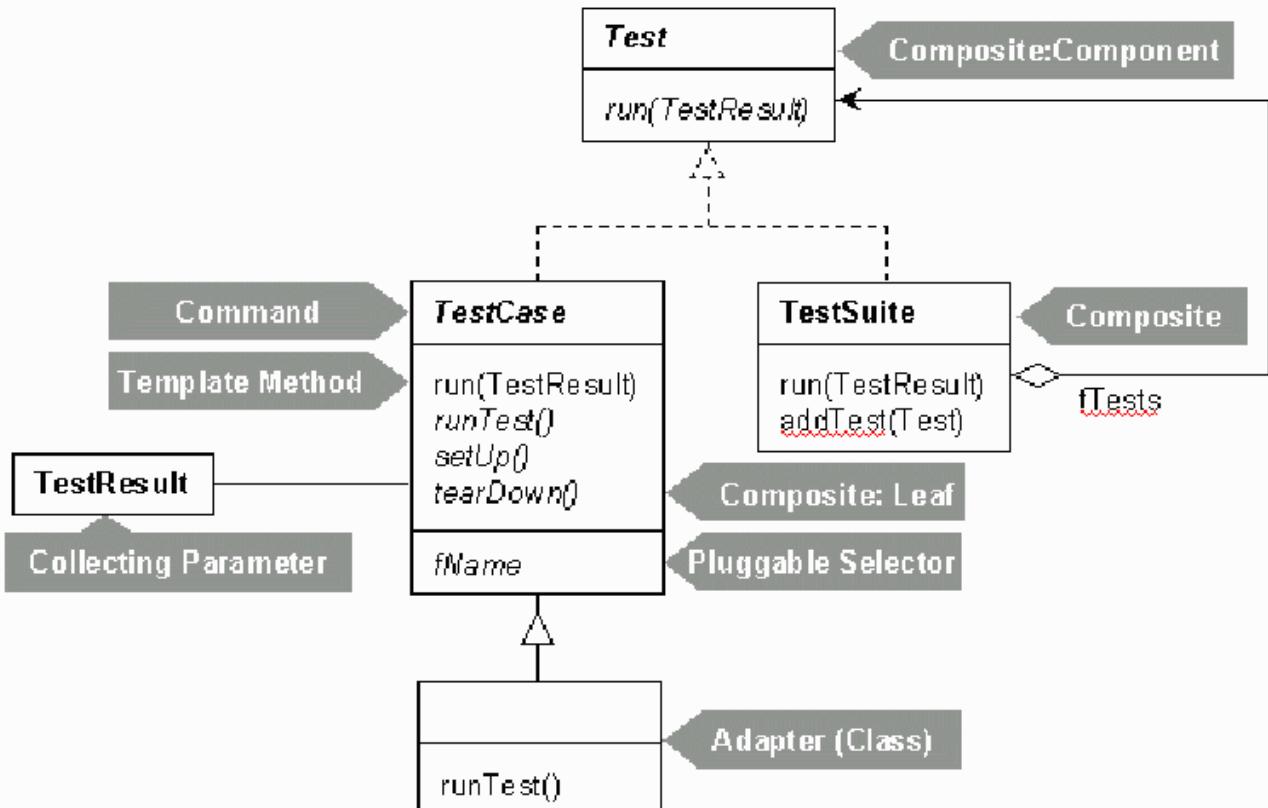
```
public static Test suite ()
{
    return new TestSuite (MoneyTest.class);
}
```

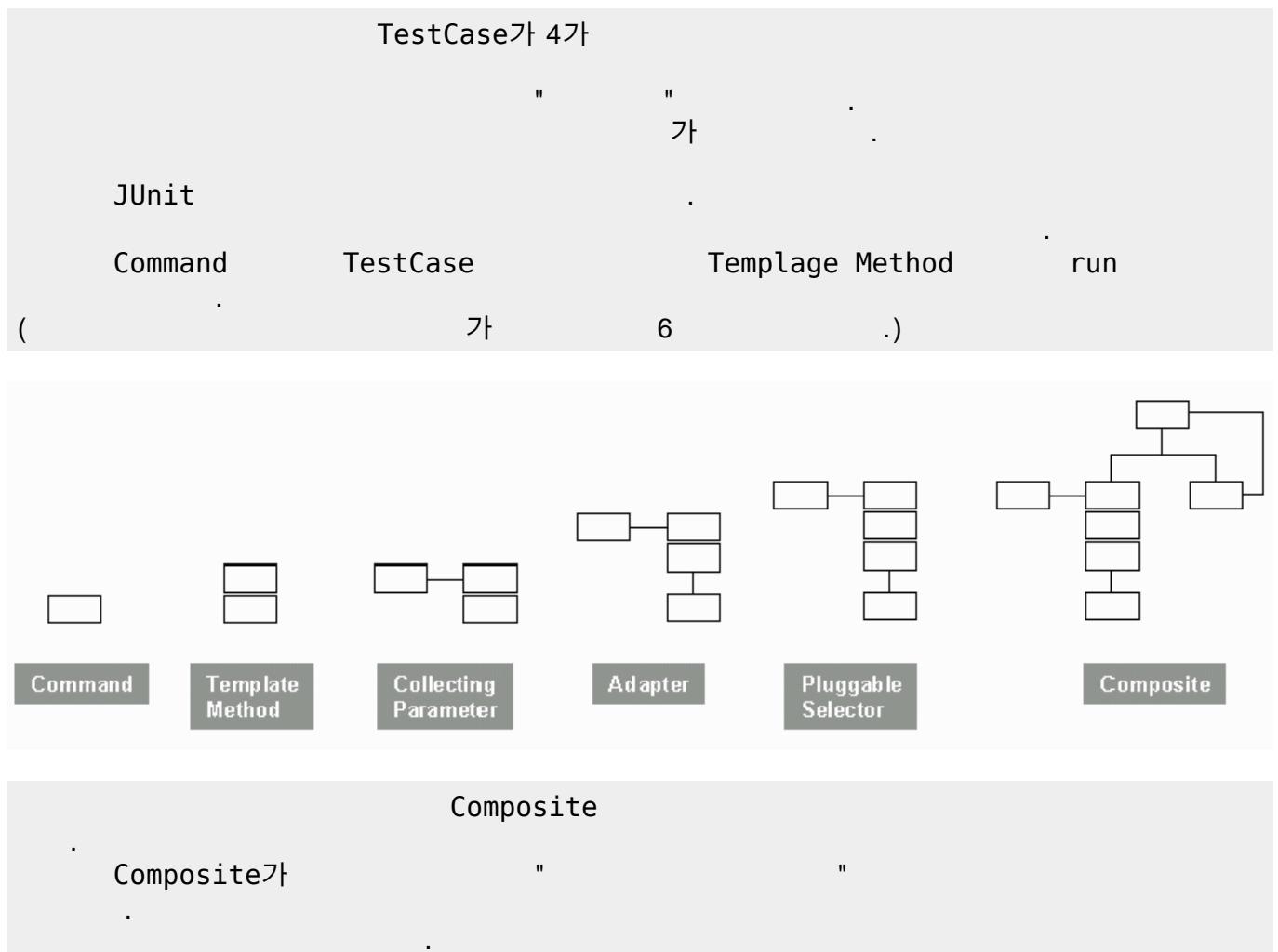
The original way is still useful when you want to run a subset of the test cases only.

3.6

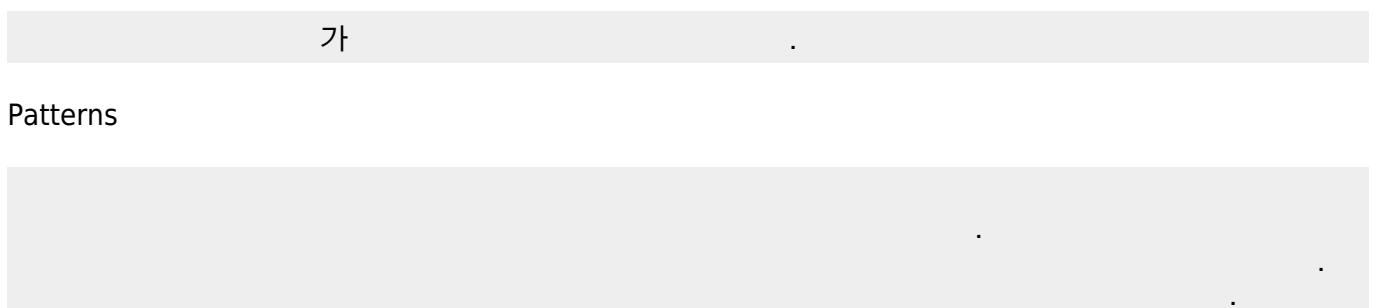
JUnit A Cook's Tour

JUnit





4.



Pattern density

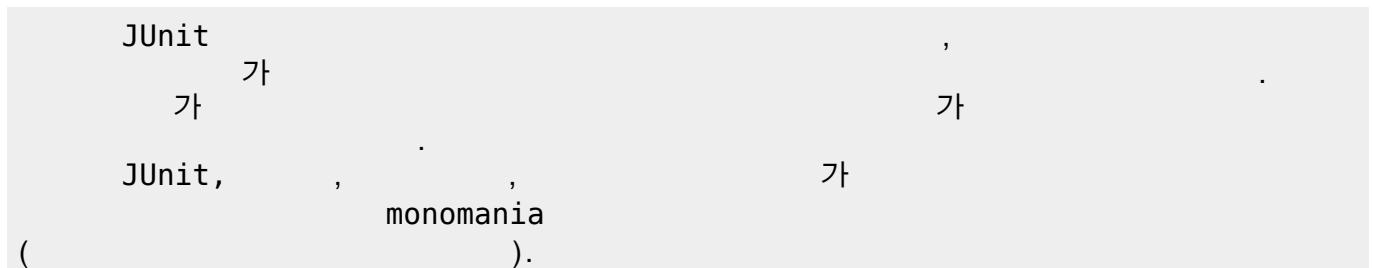


Eat your own dog food

TestTest 가 ,

JUnit 가

Intersection, not union



JUnit <http://www.junit.org>

5.

John Vlissides, Ralph Johnson, Nick Edgar

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